

**TURKISH NATURAL POZZOLAN (TNP)
FROM
CEMTECH GLOBAL ENGINEERING INC.**

PRODUCT DATA

Revision 3 – Aug 2014

NAME OF THE PRODUCT: TNP

A) Average Chemical Analysis

1) Oxide Analysis in Weight Basis (as average)

SiO ₂	61,99 %
Fe ₂ O ₃	5,10 %
Al ₂ O ₃	17,19 %
CaO	5.35 %
MgO	1.40 %
Na ₂ O	1,87 %
K ₂ O	2,79 %
SO ₃	0,21 %
Loss on Ignition	1,74 %

- 2) Conformity to EN 197-1
Reactive SiO₂ = above 29,00 %

B) Average Physical Properties:

1) Dmax

Currently available at two different Dmax

TNP1	Dmax = 120mm (sieved through 100x100mm square sieves)
TNP2	Dmax = 600mm (all-in material)

2) Other Physical Properties

Specific Gravity = 2,58 (For TNP with fineness of 90 µm sieve residue at 7%).

Unit Weight = about 1.280 kg/m³

Humidity = Based on the information from realized export cargos since 2006, humidity of TNP can be given as max. 11%. Values much below 7% were common for the exports which were realized in summer. It should be noted that humidity values fluctuate depending on the season remarkably. Therefore, our clients prefer to make shipments mainly in summer.

C) Compressive Strength Values in Cement

All values below must be only considered as introductory information about TNP and these values are valid for the conditions of the factory from which the values were obtained. Every TNP user must have its own testing program for TNP to have idea about potential blended cement strengths due to the fact that cement strength is a function of several parameters which differ considerably for different factories.

Compressive Strengths of Commercial Cements (as monthly average)

	CEM I (Control)	Cement with TNP	Cement with TNP
	CEM I 42.5R	CEM II A 42.5R	CEM II B 32.5R
Cement Composition	% 95,0 Clinker % 00,0 TNP % 05,00 Limestone % 04,00 Gypsum (The total is 104,0%)	% 81,50 Clinker % 12,80 TNP % 05,70 Limestone % 03,50 Gypsum (The total is 103,5%)	% 65,0 Clinker % 27,5 TNP % 07,5 Limestone % 03,0 Gypsum (The total is 103,0%)
Blaine Fineness (cm ² /g)	3.570	4.340	4.470
2 Day Comp. Strength (MPa)	22,5 – 24,4	21,9 – 24,6	17,0 – 18,5
28 Day Comp. Strength (MPa)	47,1 – 49,2	45,5 – 48,5	35,4 – 38,0

Notes about the table:

- 1- All the values given are for commercial cements of the cement factory which has been using TNP.
- 2- All Blaine fineness values are the average of a month and presented by rounding off the numbers to nearest multiples of 10.
- 3- Compressive strength values are given as a range for the month (deviating values are disregarded).
- 4- Percentages given for the composition of each cement type are the target values in production. During the manufacture, they deviate from the target slightly. However, these values are the average of the month which are cross-checked and confirmed by stock calculations.
- 5- The cement factory, grinds the cements with TNP to higher fineness than normal to compensate potential early strength losses (especially for CEM II A 42.5R). This is a common practice in Turkey.
- 6- All values are measured according to corresponding EN standards.
- 7- All cements are produced by intergrinding the ingredients.

Contact Information for Further Info:

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